

SEQUENCE LISTING

<110> Heintz, Nicholas
Houchens, Christopher

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Sequences and Uses Therefor

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Leu Gly Lys Glu Ser Arg Gly Leu Arg Gln Gln Gly Thr Ser Val Ala	
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Gln Ser Gly Ala Gln Ala Pro Gly Arg Ala His Arg Cys Ala His Cys	
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Cys Gln Ala Arg Leu Pro Leu Pro Cys Pro Glu Cys Gly Arg Arg Phe	
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Gly	Trp	Val	Ala	Leu	Val	Leu	His	Leu	Leu	Ala	His	Ser	Ala	Ala	Lys		
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His Phe Pro Gly Trp Val Ala Leu Trp Leu His Thr Arg Arg Cys Gln
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Ala Arg Leu Pro Leu Pro Cys Pro Glu Cys Gly Arg Arg Phe Arg His
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Asp Leu Gly Phe Ala Cys His Leu Cys Gly Gln Ser Phe Arg Gly Trp
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Ile Ala Cys Pro Lys Cys Glu Arg Arg Phe Trp Arg Arg Lys Gln Leu
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Arg Ala His Leu Arg Arg Cys His Pro Pro Ala Pro Glu Ala Arg Pro
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Phe Ile Cys Gly Asn Cys Gly Arg Ser Phe Ala Gln Trp Asp Gln Leu
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Val Ala His Lys Arg Val His Val Ala Glu Ala Leu Glu Glu Ala Ala
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Ala Lys Ala Leu Gly Pro Arg Pro Arg Gly Arg Pro Ala Val Thr Ala
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225          230          235          240
Cys Gly Lys Arg Phe Arg His Lys Pro Asn Leu Ile Ala His Arg Arg
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Lys Pro Tyr Leu Thr Ser His Arg Arg Ile His Thr Gly Glu Lys Pro	
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tac ccg tgc aaa gag tgc ggc cgc cgc ttc cgg cac aaa ccc aac ctg	240
Tyr Pro Cys Lys Glu Cys Gly Arg Arg Phe Arg His Lys Pro Asn Leu	
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ctg tct cac agc aag att cac aag cga tcc gag ggg tcg gcc cag gcc	288
Leu Ser His Ser Lys Ile His Lys Arg Ser Glu Gly Ser Ala Gln Ala	
85 90 95	
gcc ccc ggc ccg ggg agc ccc cag ctg cca gcc ggc ccc cag gag tcc	336
Ala Pro Gly Pro Gly Ser Pro Gln Leu Pro Ala Gly Pro Gln Glu Ser	
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Tyr Pro Cys Lys Glu Cys Gly Arg Arg Phe Arg His Lys Pro Asn Leu	
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Leu	Pro	Ala	Gly	Pro	Gln	Glu	Ser	Ala	Ala	Glu	Pro	Thr	Pro	Ala	Val	
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Pro	Leu	Lys	Pro	Ala	Gln	Glu	Pro	Pro	Pro	Gly	Ala	Pro	Pro	Glu	His	
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ccg	cag	gac	ccg	atc	gaa	gcc	ccc	ccc	tcc	ctc						177
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<213> Homo Sapiens

<400> 32
His Arg Cys Ala His Cys Arg Arg His Phe Pro Gly Trp Val Ala Leu
1 5 10 15
Trp Leu His Thr Arg Arg Cys Gln
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<210> 33
<211> 24
<212> PRT
<213> Homo Sapiens

<400> 33
Leu Pro Cys Pro Glu Cys Gly Arg Arg Phe Arg His Ala Pro Phe Leu
1 5 10 15
Ala Leu His Arg Gln Val His Ala
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<210> 34
<211> 24
<212> PRT
<213> Homo Sapiens

<400> 34
Phe Ala Cys His Leu Cys Gly Gln Ser Phe Arg Gly Trp Val Ala Leu
1 5 10 15
Val Leu His Leu Leu Ala His Ser
20

<210> 35
<211> 24
<212> PRT
<213> Homo Sapiens

<400> 35
Ile Ala Cys Pro Lys Cys Glu Arg Arg Phe Trp Arg Arg Lys Gln Leu
1 5 10 15
Arg Ala His Leu Arg Arg Cys His
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<210> 36
<211> 24
<212> PRT
<213> Homo Sapiens

<400> 36
Phe Ile Cys Gly Asn Cys Gly Arg Ser Phe Ala Gln Trp Asp Gln Leu
1 5 10 15

<210> 42

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      <400> 42
Phe Ala Cys Glu Glu Cys Gly Arg Arg Phe Ser Gln Gly Ser His Leu
  1             5             10             15
Ala Ala His Arg Pro Asp His Ala
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<210> 43
<211> 24
<212> PRT
<213> Homo Sapiens
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      <400> 43
Phe Val Cys Pro Asp Cys Gly Lys Ala Phe Arg His Lys Pro Tyr Leu
 1          5          10          15
Ala Arg His Arg Arg Ile His Thr
      20

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<210> 44
<211> 24
<212> PRT
<213> Homo Sapiens
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      <400> 44
Tyr Val Cys Pro Asp Cys Gly Lys Ala Phe Ser Gln Lys Ser Asn Leu
  1           5           10           15
Val Ser His Arg Ile His Thr
      20

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<210> 45
<211> 24
<212> PRT
<213> Homo Sapiens
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```

      <400> 45
Tyr Ala Cys Pro Asp Cys Asp Arg Ser Phe Ser Gln Lys Ser Asn Leu
  1           5           10           15
Ile Thr His Arg Lys Ser His Ile
      20

```

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<210> 46
<211> 24
<212> PRT
<213> Homo Sapiens
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```

      <400> 46
Phe Cys Cys Ala Ile Cys Gly Gln Thr Phe Asp Asp Glu Glu Arg Leu
 1          5          10          15
Leu Ala His Gln Lys Lys His Asp
      20

```

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<210> 47
<211> 24
<212> PRT
<213> Homo Sapiens
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 <222> (24)...(24)
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<400> 47
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 1 5 10 15
 Xaa Xaa His Xaa Xaa Xaa His Xaa
 20

<210> 48
 <211> 702
 <212> DNA
 <213> Homo Sapiens

<220>
 <221> CDS
 <222> (1)...(702)

<400> 48
 atg ctg gaa cgt cgt tgc agg ggc ccc ctg gcc atg ggc ctg gcc cag 48
 Met Leu Glu Arg Arg Cys Arg Gly Pro Leu Ala Met Gly Leu Ala Gln
 1 5 10 15
 ccc cga ctc ctt tct ggg ccc tcc cag gag tca ccc cag acc ctg ggg 96
 Pro Arg Leu Leu Ser Gly Pro Ser Gln Glu Ser Pro Gln Thr Leu Gly
 20 25 30
 aag gag tcc cgc ggg ctg agg caa caa ggc acg tca gtg gcc cag tct 144
 Lys Glu Ser Arg Gly Leu Arg Gln Gln Gly Thr Ser Val Ala Gln Ser
 35 40 45
 ggt gcc caa gcc cca ggc agg gcc cat cgc tgt gcc cac tgt cga agg 192
 Gly Ala Gln Ala Pro Gly Arg Ala His Arg Cys Ala His Cys Arg Arg

50	55	60	
cac ttc cct ggc tgg gtg gct ctg tgg ctt	cac acc cgc cgg tgc cag	240	
His Phe Pro Gly Trp Val Ala Leu Trp Leu	His Thr Arg Arg Cys Gln		
65	70 75 80		
gcc cgg ctg ccc ttg ccc tgc cct gag tgt ggc cgt cgc ttt cgc cat	288		
Ala Arg Leu Pro Leu Pro Cys Pro Glu Cys Gly Arg Arg Phe Arg His			
	85 90 95		
gcc ccc ttc tta gca ctg cac cgc cag gtc cat gct gct gcc acc cca	336		
Ala Pro Phe Leu Ala Leu His Arg Gln Val His Ala Ala Ala Thr Pro			
	100 105 110		
gac ctg ggc ttt gcc tgc cac ctg tgt ggg cag agc ttc cga ggc tgg	384		
Asp Leu Gly Phe Ala Cys His Leu Cys Gly Gln Ser Phe Arg Gly Trp			
	115 120 125		
gtg gcc ctg gtt ctg cat ctg ctg gcc cat tca gct gca aag caa ccc	432		
Val Ala Leu Val Leu His Leu Leu Ala His Ser Ala Ala Lys Gln Pro			
	130 135 140		
atc gct tgt ccc aaa tgc gag aga cgc ttc tgg cga cga aag cag ctt	480		
Ile Ala Cys Pro Lys Cys Glu Arg Arg Phe Trp Arg Arg Lys Gln Leu			
	145 150 155 160		
cga gct cat ctg cgg cgg tgc cac cct ccc gcc ccg gag gcc cgg ccc	528		
Arg Ala His Leu Arg Arg Cys His Pro Pro Ala Pro Glu Ala Arg Pro			
	165 170 175		
ttc ata tgc ggc aac tgt ggc cgg agc ttt gcc cag tgg gac cag cta	576		
Phe Ile Cys Gly Asn Cys Gly Arg Ser Phe Ala Gln Trp Asp Gln Leu			
	180 185 190		
gtt gcc cac aag cgg gtg cac gta gct gag gcc ctg gag gag gcc gca	624		
Val Ala His Lys Arg Val His Val Ala Glu Ala Leu Glu Glu Ala Ala			
	195 200 205		
gcc aag gct ctg ggg ccc cgg ccc agg ggc cgc ccc gcg gtg acc gcc	672		
Ala Lys Ala Leu Gly Pro Arg Pro Arg Gly Arg Pro Ala Val Thr Ala			
	210 215 220		
ccc cgg ccc ggt gga gat gcc gtc gac cgc	702		
Pro Arg Pro Gly Gly Asp Ala Val Asp Arg			
	225 230		

<210> 49
 <211> 234
 <212> PRT
 <213> Homo Sapiens

<400> 49
 Met Leu Glu Arg Arg Cys Arg Gly Pro Leu Ala Met Gly Leu Ala Gln
 1 5 10 15
 Pro Arg Leu Leu Ser Gly Pro Ser Gln Glu Ser Pro Gln Thr Leu Gly
 20 25 30
 Lys Glu Ser Arg Gly Leu Arg Gln Gln Gly Thr Ser Val Ala Gln Ser
 35 40 45

Gly	Ala	Gln	Ala	Pro	Gly	Arg	Ala	His	Arg	Cys	Ala	His	Cys	Arg	Arg
50						55					60				
His	Phe	Pro	Gly	Trp	Val	Ala	Leu	Trp	Leu	His	Thr	Arg	Arg	Cys	Gln
65					70					75					80
Ala	Arg	Leu	Pro	Leu	Pro	Cys	Pro	Glu	Cys	Gly	Arg	Arg	Phe	Arg	His
				85					90					95	
Ala	Pro	Phe	Leu	Ala	Leu	His	Arg	Gln	Val	His	Ala	Ala	Ala	Thr	Pro
			100					105					110		
Asp	Leu	Gly	Phe	Ala	Cys	His	Leu	Cys	Gly	Gln	Ser	Phe	Arg	Gly	Trp
	115						120					125			
Val	Ala	Leu	Val	Leu	His	Leu	Leu	Ala	His	Ser	Ala	Ala	Lys	Gln	Pro
	130					135					140				
Ile	Ala	Cys	Pro	Lys	Cys	Glu	Arg	Arg	Phe	Trp	Arg	Arg	Lys	Gln	Leu
145					150					155					160
Arg	Ala	His	Leu	Arg	Arg	Cys	His	Pro	Pro	Ala	Pro	Glu	Ala	Arg	Pro
				165					170					175	
Phe	Ile	Cys	Gly	Asn	Cys	Gly	Arg	Ser	Phe	Ala	Gln	Trp	Asp	Gln	Leu
			180				185						190		
Val	Ala	His	Lys	Arg	Val	His	Val	Ala	Glu	Ala	Leu	Glu	Glu	Ala	Ala
	195						200					205			
Ala	Lys	Ala	Leu	Gly	Pro	Arg	Pro	Arg	Gly	Arg	Pro	Ala	Val	Thr	Ala
	210					215					220				
Pro	Arg	Pro	Gly	Gly	Asp	Ala	Val	Asp	Arg						
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 <212> DNA
 <213> Homo Sapiens

<220>
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 <222> (1)...(441)

<400> 50

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1				5					10					15		
cgc	ttc	cgg	cac	aag	ccc	aac	ttg	atc	gct	cac	cgc	cgc	gtg	cac	acg	96
Arg	Phe	Arg	His	Lys	Pro	Asn	Leu	Ile	Ala	His	Arg	Arg	Val	His	Thr	
			20					25					30			
ggc	gag	cgg	ccc	cac	cag	tgc	ccc	gag	tgc	ggg	aag	cgc	ttt	acc	aat	144
Gly	Glu	Arg	Pro	His	Gln	Cys	Pro	Glu	Cys	Gly	Lys	Arg	Phe	Thr	Asn	
			35				40					45				
aag	ccc	tat	ctg	act	tcg	cac	cgg	cgc	atc	cac	acc	ggc	gag	aag	ccc	192
Lys	Pro	Tyr	Leu	Thr	Ser	His	Arg	Arg	Ile	His	Thr	Gly	Glu	Lys	Pro	
	50					55					60					
tac	ccg	tgc	aaa	gag	tgc	ggc	cgc	cgc	ttc	cgg	cac	aaa	ccc	aac	ctg	240
Tyr	Pro	Cys	Lys	Glu	Cys	Gly	Arg	Arg	Phe	Arg	His	Lys	Pro	Asn	Leu	
	65				70				75						80	
ctg	tct	cac	agc	aag	att	cac	aag	cga	tcc	gag	ggg	tcg	gcc	cag	gcc	288
Leu	Ser	His	Ser	Lys	Ile	His	Lys	Arg	Ser	Glu	Gly	Ser	Ala	Gln	Ala	
				85					90					95		

gcc ccc ggc ccg ggg agc ccc cag ctg cca gcc ggc ccc cag gag tcc	336
Ala Pro Gly Pro Gly Ser Pro Gln Leu Pro Ala Gly Pro Gln Glu Ser	
100 105 110	
gcg gcc gag ccc acc ccg gcg gta cct ctg aaa ccg gcc cag gag ccg	384
Ala Ala Glu Pro Thr Pro Ala Val Pro Leu Lys Pro Ala Gln Glu Pro	
115 120 125	
ccg cca ggg gcc ccg cca gag cac ccg cag gac ccg atc gaa gcc ccc	432
Pro Pro Gly Ala Pro Pro Glu His Pro Gln Asp Pro Ile Glu Ala Pro	
130 135 140	
ccc tcc ctc	441
Pro Ser Leu	
145	

<210> 51
 <211> 147
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 <213> Homo Sapiens

<400> 51	
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Arg Phe Arg His Lys Pro Asn Leu Ile Ala His Arg Arg Val His Thr	
20 25 30	
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35 40 45	
Lys Pro Tyr Leu Thr Ser His Arg Arg Ile His Thr Gly Glu Lys Pro	
50 55 60	
Tyr Pro Cys Lys Glu Cys Gly Arg Arg Phe Arg His Lys Pro Asn Leu	
65 70 75 80	
Leu Ser His Ser Lys Ile His Lys Arg Ser Glu Gly Ser Ala Gln Ala	
85 90 95	
Ala Pro Gly Pro Gly Ser Pro Gln Leu Pro Ala Gly Pro Gln Glu Ser	
100 105 110	
Ala Ala Glu Pro Thr Pro Ala Val Pro Leu Lys Pro Ala Gln Glu Pro	
115 120 125	
Pro Pro Gly Ala Pro Pro Glu His Pro Gln Asp Pro Ile Glu Ala Pro	
130 135 140	
Pro Ser Leu	
145	

<210> 52
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<220>
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<400> 52
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<210> 53
 <211> 16
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<220>
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<400> 53
ccttccttct tattca 16

<210> 54
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<220>
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<400> 54
ttcatttgat tttatt 16

<210> 55
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<400> 55
ttttataatt cctatt 16

<210> 56
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<220>
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<400> 56
tctaattttc ttttta 16

<210> 57
<211> 16
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<400> 57
tgttttgatt ttttat 16

<210> 58
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<220>
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<400> 58
tatttttattt attaatt 16

<210> 59
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<400> 59
ttctttttttc ataaat 16

<210> 60
<211> 16
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tattattttta tgttga 16

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tttttaaatt ttttta 16

<210> 62
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<210> 63
<211> 16
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<400> 63
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<210> 64

<211> 16
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<400> 64
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<210> 65
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<220>
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<400> 65
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<210> 66
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<220>
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<400> 66
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<210> 67
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 <212> DNA
 <213> Cricetulus sp.

<400> 67
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<210> 68
 <211> 72
 <212> PRT
 <213> Homo Sapiens

<400> 68
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 20 25 30
 Glu Pro Thr Pro Ala Val Pro Leu Lys Pro Ala Gln Glu Pro Pro Pro
 35 40 45
 Gly Ala Pro Pro Glu His Pro Gln Asp Pro Ile Glu Ala Pro Pro Ser
 50 55 60
 Leu Tyr Ser Cys Asp Asp Cys Gly
 65 70